Maryland Department of Health and Mental Hygiene
Epidemiology and Disease Control Program
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Guidelines for Determining Placement of Children with Methicillin Resistant *Staphylococcus aureus* (MRSA) and Vancomycin Resistant *Enterococcus* (VRE) into School Settings

Recommendations have been developed for placement in school settings of children who have or have had an infection due to vancomycin resistant *Enterococcus* (VRE) or methicillin resistant *Staphylococcus aureus* (MRSA). These recommendations have been developed to assist local health departments and local school systems with decisions on placement of such children. **Please refer to Attachment 1 "Definitions of Terms" and Attachment 2 "Frequently Asked Questions" included at the end of this document.**

The goal of these recommendations is to include children colonized with MRSA or VRE in school settings with educational programs whenever feasible. Use of the infection control measures outlined in this document should help to maintain the health of students and staff and to limit the spread of these antibiotic resistant bacteria.

I. Perform an assessment

Consider the following factors that may determine placement:

1. The child's age.
2. When the child was found to be infected or colonized with the organism.
3. Whether the child currently has signs of infection.
4. Where the infection was located (e.g., skin, blood, stool, etc.).
5. The child's underlying medical problems and current health status.
6. The route of transmission of the bacteria.
7. Specific needs or characteristics of the child, including neurological development and condition, physical condition, and behavior.
8. The susceptibility to infection of other persons who are likely to be exposed to the carrier.
9. The precautions that need to be taken to minimize or eliminate the risk of transmission, and the ability of the program to implement these precautions.

II. Verify diagnosis and determine current colonization status

Verification of the diagnosis may require obtaining information such as dates and sites of cultures. In addition, schools must clarify whether the child has an active infection vs. colonization with MRSA or VRE. Schools should maintain close contact with the doctor of any child who may have an antibiotic resistant infection to ensure that accurate medical information is available.

III. Monitor ongoing colonization status

Periodic cultures may be needed on a case by case basis to determine whether the child continues to be colonized with the pathogen. While schools are not responsible for obtaining cultures, they should maintain close contact with the doctor of any child determined to have an antibiotic resistant infection.

IV. Follow infection control precautions

A. The following infection control precautions should be implemented in settings where children are colonized with MRSA and VRE:

- Gloves should be worn when handling the student, or touching blood, body fluids, secretions, excretions, and any items contaminated with these fluids. Gloves should be used before touching mucous membranes and non-intact skin. **Gloves should be removed after use, and handwashing performed before touching non-contaminated items and environmental surfaces and before tending to another child.**
- Linens (e.g., from cribs or cots) that may contain blood, secretions, or excretions should be handled in a manner to prevent skin, mucous membrane and clothing exposure.

For children who must be cared for in the school health room, additional precautions are recommended. These include:

- Masks, eye protection, and face shields should be worn to protect mucous membranes if care of the child may result in splashes or sprays of blood, body fluids, secretions, or excretions.
- Non-sterile gowns should be worn during any activities that may involve splashes or sprays of blood, body fluids, secretions, or excretions.
- Used patient care equipment should be handled in a manner that prevents skin and mucous membrane exposure as well as contamination of clothing.
- Resuscitation bags should be available for use to obviate the need for mouth-to-mouth resuscitation.
- Dedicate the use of medical equipment to a single student.

(American Academy of Pediatrics, Report of the Committee on Infectious Diseases, 2000 Red Book)

B. Routine procedures for cleaning the environment should be followed (e.g., daily cleaning of surfaces, floors, and toys, etc.).
    - In general, use of routine housekeeping procedures using a freshly prepared solution of commercially available cleaner such as detergent,

disinfectant-detergent, or chemical germicide is adequate for cleanup of spills of vomitus, urine, and feces.

- For cleanup of fluid from wounds, blood, or fluids containing blood, the area should be disinfected using a freshly prepared bleach solution. This bleach solution should be a 1:64 mixture of bleach and water (1/4 cup bleach diluted in 1 gallon of water). The solution should be applied for at least 30 seconds, rinsed, and dried. Bleach solution should be prepared daily because bleach will lose its strength once mixed with water.
- Toys placed in children's mouths or otherwise contaminated by body secretions should be cleaned with water and detergent, disinfected, and rinsed before handling by another child.
- Toys in infant and toddler rooms that are used frequently should be cleaned and disinfected daily. Toys in rooms for older children (toilet trained) should be cleaned and disinfected weekly and when soiled. More frequent cleaning and disinfection may be needed in rooms with older children who are not toilet trained, or whose behaviors may lead to significant contamination of toys.

(American Academy of Pediatrics, Report of the Committee on Infectious Diseases, 2000 Red Book).

C. Children colonized with MRSA or VRE should not be placed in classrooms with, and should not have direct contact with children who have immune system suppression. Children with immune system suppression may include those taking medications that limit the body's ability to fight infection (e.g. chemotherapy for cancer, high doses of steroids for asthma, rheumatologic disorders, etc., and medications to prevent rejection of organ transplants), or children with other conditions that limit their ability to fight infection (e.g. HIV).

D. Children who are colonized with MRSA or VRE and have symptoms suggestive of infection (such as fever, rash, cough, or diarrhea) should be excluded from the school setting until evaluated by their doctor. In some instances, the presence of more significant illness in these children may require additional infection control precautions (for example, children with MRSA pneumonia would require use of additional infection control precautions, and therefore should only return to school after resolution of the pneumonia).

V. Determine placement on a case by case basis

Schools should evaluate each situation involving a child colonized with MRSA or VRE individually. This evaluation may be made in conjunction with the local health department. Determination of placement into school settings with educational programs should be made based on the factors listed under "assessment," and the school's ability to implement appropriate control measures and precautions.

VI. Additional Guidelines

The chart in Attachment 3 provides additional guidelines on precautions and exclusion for specific circumstances when a child is colonized with MRSA or VRE.

References

American Academy of Pediatrics. In: Pickering LK, ed. *2000 Red Book: Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000.

The Johns Hopkins Hospital Epidemiology and Infection Control Department. *Methicillin Resistant Staphylococcus Aureus (MRSA)*. Patient Education Reference 276. Baltimore: The Johns Hopkins Hospital, 1997.

The Johns Hopkins Hospital Epidemiology and Infection Control Department. *Vancomycin Resistant Enterococcus (VRE)*. Patient Education Reference 296. Baltimore: The Johns Hopkins Hospital, 1998.

Maryland Department of Health and Mental Hygiene. Epidemiology and Disease Control Program. *Guidelines for the Prevention and Control of Vancomycin-Resistant Enterococci (VRE) in Long Term Care Facilities.* 1996.

Recommendations for Preventing the Spread of Vancomycin Resistance. Recommendations of the Hospital Infection Control Practices Advisory Committee (HICPAC). *MMWR* 1995:44(RR12);1-13.

Attachment 1: Definition of Terms

Antibiotic – medications that weaken or kill bacteria, and are used to treat infections caused by bacteria. Antibiotics have no effect on infections caused by viruses.

Antibiotic resistance - when bacteria can no longer be killed by a particular antibiotic. MRSA and VRE are examples of bacteria that have developed resistance to many commonly used antibiotics. If a bacterium is resistant to many antibiotics, treating the infections it causes can be very difficult or even impossible. Widespread inappropriate use of antibiotics contributes to the development of antibiotic resistance.

Colonization - when bacteria are present in a person's nose, mouth, gut or other site, but do not cause illness. A person may be colonized with bacteria and feel fine. He or she may not know that these bacteria are present in their body.

Carrier - a person who is colonized with bacteria, such as MRSA or VRE.

Infection - when a bacterium or other germ (like a virus) causes illness in a person. Some signs and symptoms of infection include fever, pus from a wound, coughing, or diarrhea.

Enterococci – a group of several bacterial species that are normally found in the gastrointestinal tract.

Vancomycin resistant *Enterococcus* ("VRE") - enterococci that cannot be killed by many frequently used antibiotics, including vancomycin.

***Staphylococcus aureus* (or "*Staph aureus*" for short) –** a type of bacteria commonly found in the environment and sometimes found in the nose and on the skin of healthy people. It can cause several types of infections, including skin and wound infections, and less commonly pneumonia.

Methicillin resistant *Staphylococcus aureus* ("MRSA") - a subgroup of *Staphylococcus aureus* that cannot be killed by many frequently used antibiotics, including methicillin.

Attachment 2: Frequently Asked Questions About MRSA and VRE in School Settings

Are MRSA or VRE "superbugs"?

- No. Neither MRSA nor VRE are stronger than similar bacteria that are not antibiotic resistant. The problem is that infections due to these bacteria are harder to treat because doctors cannot use many of the common antibiotics available. Doctors who treat patients infected with MRSA or VRE may need to do special laboratory tests to determine the best treatment choice.

What are the risk factors for becoming colonized with MRSA or VRE?

- People are at higher risk of being colonized with MRSA or VRE if they have been in an intensive care unit, have been sick with a long term illness, have had major surgery, have visited a hospital emergency room, have received many different types of antibiotics, or have a family member who is colonized. However MRSA and VRE may be present in the general environment, and there are some people who are colonized with these organisms even though they have no risk factors.

How does one find out he or she is colonized with MRSA or VRE?

- MRSA colonization can be identified by performing a culture from a wound site, a nasal swab, or from blood, urine, or sputum.
- VRE colonization can be identified by performing a culture from blood, urine, or stool.

How can MRSA and VRE be spread?

- VRE is most commonly found in stool and urine. Spread can occur from direct contact with an infected or colonized person's stool or urine. If a person gets VRE on his/her hands following contact with stool or urine, he/she can spread the organism to anything he/she touches. Careful handwashing with soap and water for at least 10 seconds will remove the bacteria from the skin and reduce its spread. VRE cannot be spread by coughing or sneezing.
- MRSA is spread from person to person, usually via the hands and nasal discharge or droplets (e.g., from a sneeze). Again, careful handwashing can help prevent the spread of MRSA.

What is the risk, if any, to staff or students exposed to MRSA or VRE?

- MRSA and VRE do not pose any significant risk to healthy school staff or students. Both healthy children and adults may be colonized with MRSA or VRE and usually they are not aware that they are colonized. Persons at increased risk for developing an infection from MRSA or VRE are those with immune system suppression. These persons may include those taking medications that limit the body's ability to fight infection (e.g., chemotherapy for cancer, high doses of steroids for asthma, rheumatologic disorders, etc., and medications to prevent rejection of organ transplants), or persons with conditions that limit their ability to fight infection (e.g., HIV).

Attachment 3: Additional Guidelines for Infection Control Precautions for MRSA and VRE in School Settings*

Site of Colonization	Circumstance	Exclusion Guidelines
Stool	Child continent, no diarrhea	• Exclusion not indicated
	Child continent, has diarrhea	• Exclude until diarrhea resolves
	Child incontinent, no diarrhea	• Single caretaker if possible • Consider exclusion based on assessment (e.g. behavioral issues)
	Child incontinent, has diarrhea	• Exclusion until resolution of diarrhea
Wound/sore	Not draining, able to be covered	• Cover wound
	Not draining, cannot be covered	• Single caretaker if possible • Consider exclusion based on assessment until wound heals
	Draining, can be covered	• Single caretaker if dressing changes needed • Consider exclusion based on assessment if significant drainage
	Draining, cannot be covered	• Exclusion until lesion no longer draining or can be covered
Saliva/ nasopharynx	Able to control secretions	• Exclusion not indicated
	Difficulty with controlling secretions	• Single caretaker if possible • Consider exclusion based on assessment if severe problem with secretion control
	Upper respiratory infection	• Single caretaker if possible • Consider exclusion based on assessment until upper respiratory infection resolves • Exclusion may be based on child's assessed ability to cover their nose and mouth while coughing or sneezing

*** Infection control precautions as outlined in Section IV (above) should be used in all of the above circumstances**